

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/02833

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C12N15/53, C12N9/14, C12P7/50, C12N1/15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C12N15/53, C12N9/14, C12P7/50, C12N1/15

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Genbank/MEBL/DDBJ/GeneSeq, SwissProt/PIR/Geneseq,
MEDLINE/CAPLUS/BIOSIS/WPIDS (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<u>X</u> Y	Porro, D. et al., "Development of metabolically engineered <i>Saccharomyces cerevisiae</i> cells for the production of lactic acid", Biotechnol. Prog., (1995), Vol.11, pages 294 to 298, abstract; Fig. 5; page 294, right column, Par. No. [0002]; page 296, left column, line 26 to right column, line 3	<u>1-7, 18, 19</u> 8-17
Y	Kellermann, E. et al., "Analysis of the primary structure and promoter function of a pyruvate decarboxylase gene (PDS1) from <i>Saccharomyces cerevisiae</i> ", Nucleic Acids Res., (1986), Vol.14, No.22, pages 8963 to 8977, full text	8-17

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
20 May, 2003 (20.05.03)

Date of mailing of the international search report
03 June, 2003 (03.06.03)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.


INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/02833

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<u>X</u> Y	ADACHI, E. et al., "Modification of metabolic pathways of <i>Saccharomyces cerevisiae</i> by the expression of lactate dehydrogenase and deletion of pyruvate decarboxylase genes for the lactic acid fermentation at low pH value", <i>Journal of Fermentation and Bioengineering</i> , (1998), Vol.86, No.3, pages 284 to 289, abstract; Figs. 6, 7	<u>1-7, 18, 19</u> 8-17
Y	Bloxham, D.P., "Modification of pig heart lactate dehydrogenase with methyl methanethiosulphonate to produce an enzyme with altered catalytic activity", <i>Biochemical Journal</i> , (1977), Vol.161, No.3, pages 643 to 651, page 645, right column, Par. No. [0003]	1,2,6-19
A	ISHIGURO, N. et al., "Primary structure of bovine lactate dehydrogenase-A isozyme and its synthesis in <i>Escherichia coli</i> ", <i>Gene</i> , (1990), Vol.91, pages 281 to 285, Fig. 1	3-5

A. 発明の属する分野の分類 (国際特許分類 (IPC)) Int. Cl ⁷ C12N15/53, C12N9/14, C12P7/50, C12N1/15		
B. 調査を行った分野 調査を行った最小限資料 (国際特許分類 (IPC)) Int. Cl ⁷ C12N15/53, C12N9/14, C12P7/50, C12N1/15		
最小限資料以外の資料で調査を行った分野に含まれるもの		
国際調査で使用した電子データベース (データベースの名称、調査に使用した用語) Genbank/EMBL/DBJ/GenSeq SwissProt/PIR/Geneseq MEDLINE/CAPLUS/BIOSIS/WPIDS (STN)		
C. 関連すると認められる文献		
引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
X Y	Porro, D. et al., "Development of metabolically engineered Saccharomyces cerevisiae cells for the production of lactic acid" Biotechnol. Prog., (1995), Vol.11, pp.294-298, 要約, Fig.5, 第294頁右欄第2段落及び第296頁左欄第26行-右欄第3行参照	1-7, 18, 19 8-17
Y	Kellermann, E. et al., "Analysis of the primary structure and promoter function of a pyruvate decarboxylase gene (PDC1) from Saccharomyces cerevisiae" Nucleic Acids Res., (1986), Vol.14, No.22, pp.8963-8977, 全文参照	8-17
<input checked="" type="checkbox"/> C欄の続きにも文献が列挙されている。 <input type="checkbox"/> パテントファミリーに関する別紙を参照。		
* 引用文献のカテゴリー 「A」 特に関連のある文献ではなく、一般的技術水準を示すもの 「E」 国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの 「L」 優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献 (理由を付す) 「O」 口頭による開示、使用、展示等に言及する文献 「P」 国際出願日前で、かつ優先権の主張の基礎となる出願日の後に公表された文献 「T」 国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの 「X」 特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの 「Y」 特に関連のある文献であって、当該文献と他の1以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの 「&」 同一パテントファミリー文献		
国際調査を完了した日 20.05.03	国際調査報告の発送日 03.06.03	
国際調査機関の名称及びあて先 日本国特許庁 (ISA/JP) 郵便番号100-8915 東京都千代田区霞が関三丁目4番3号	特許庁審査官 (権限のある職員) 新留 豊  4B 9639 電話番号 03-3581-1101 内線 3448	

C (続き) . 関連すると認められる文献		
引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
X Y	Adachi, E. et al., "Modification of metabolic pathways of <i>Saccharomyces cerevisiae</i> by the expression of lactate dehydrogenase and deletion of pyruvate decarboxylase genes for the lactic acid fermentation at low pH value" Journal of Fermentation and Bioengineering, (1998), Vol.86, No.3, pp.284-289, 要約及びFig.6, 7参照	<u>1-7, 18, 19</u> 8-17
Y	Bloxham, D.P., "Modification of pig heart lactate dehydrogenase with methyl methanethiosulphonate to produce an enzyme with altered catalytic activity" Biochemical Journal, (1977) Vol.161, No.3, pp.643-651, 第645頁右欄第3段落参照	1, 2, 6-19
A	Ishiguro, N. et al., "Primary structure of bovine lactate dehydrogenase-A isozyme and its synthesis in <i>Escherichia coli</i> " Gene, (1990), Vol.91, pp.281-285, Fig.1参照	3-5